I. AMENDMENTS

Listing of Claims

The following listing of claims replaces all previous listings or versions thereof:

1-23. (Canceled)

24. (Previously presented) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in large-area fluorescent excitation, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally, relative to the other during use; and

a control unit adapted to coordinate and synchronize illumination times and lateral movement between said sample holder and said detection and analysis system during use.

25. (Canceled)

26. (Previously presented) The arrangement of claim 24, wherein said marker molecules are the same fluorescent dye.

27. (Previously presented) The arrangement of claim 24, wherein said marker molecules are different marker molecules.

28. (Previously presented) The arrangement of claim 24, wherein said control unit is further adapted to coordinate and synchronize wave lengths during use.

29. (Previously presented) The arrangement of claim 24, wherein at least one of said sample holder and said detection and analysis system is movable both laterally and vertically relative to the other during use, and the control unit is further adapted to coordinate vertical movement between said sample holder and said detection and analysis system during use.

30. (Previously presented) The arrangement of claim 24, wherein said at least one source of light is adapted to fluorescently excite areas in the range of 100 to 10,000 μm^2 during use.

31. (Previously presented) The arrangement of claim 24, wherein said control unit is further adapted to coordinate and synchronize positioning and shifting of images to each sample position on a pixel array of said CCD camera during use.

32. (Previously presented) The arrangement of claim 24, wherein said at least one source of light is a laser.

33. (Previously presented) The arrangement of claim 32, wherein said laser is an acousto-optically switchable laser light.

34. (Previously presented) The arrangement of claim 24, wherein said at least one source of a light comprises an argon laser, a dye laser or a two-photon fluorescence excitation laser.

35. (Previously presented) The arrangement of claim 24, wherein said control unit further comprises a pulse transmitter and a software adapted to control said at least one source of light and said movement of said sample holder during use.

36. (Previously presented) The arrangement of claim 24, wherein said CCD camera includes a frame shift mode and a continuous readout mode.

37. (Previously presented) The arrangement of claim 24, further comprising an epifluorescence microscope.

38. (Previously presented) The arrangement of claim 37, wherein said epifluorescence microscope has a collecting efficiency of fluorescence quantums of >3%, at 40- to 100-fold magnification during use.

39. (Previously presented) The arrangement of claim 24, further comprising an N_2-based cooling system adapted to cool said CCD camera during use, said CCD camera having a large pixel array, a conversion of photons into electrons of from 0.8 to 0.9 in the optical range, a readout noise of only a few electrons per pixel at 1 μs/pixel readout speed, and at least one of << 1 dark counts/pixel x s and a lineshift rate of $> 3 \times 10^5$/s.

40. (Previously presented) The arrangement of claim 39, wherein said large pixel array is a pixel array of $\geq$ 1340 x 1300.

41. (Previously presented) The arrangement of claim 24, further defined as adapted to visualize a sample comprising a molecule library prepared by combinatorial chemistry during use.

42. (Previously presented) The arrangement of claim 24, further defined as adapted to visualize a sample comprising a multi-well plate, a microtiter plate or a nanotiter plate during use.

43. (Previously presented) The arrangement of claim 24, wherein said sample holder comprises a flowthrough cell.

44. (Previously presented) The arrangement of claim 24, wherein said detection and analysis system comprises a focusing plane movable step-wise along z direction by a piezo element during use.

45. (Previously presented) The arrangement of claim 37, wherein said epifluorescence microscope has a parallel beam region during use as said at least one source of light and comprises a galvano-optical mirror in said parallel beam region.

46-60. (Canceled)

61. (Previously presented) The arrangement of claim 24, wherein both the sample holder and the detection and analysis system are movable laterally, relative to the other during use.

62. (Previously presented) The arrangement of claim 24, wherein the arrangement is adapted to visualize movements of molecules, interactions between molecules, and molecular processes in a sample during use, by using a single dye tracing (SDT) method.

63. (New) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in wide-field illumination for fluorescent excitation, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally, relative to the other during use; and

a control unit adapted to coordinate and synchronize illumination times and lateral movement between said sample holder and said detection and analysis system during use.

64. (New) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in fluorescent excitation of a 100 to 100,000 μm^2 area, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally, relative to the other during use; and

a control unit adapted to coordinate and synchronize illumination times and lateral movement between said sample holder and said detection and analysis system during use.

65. (New) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in large-area fluorescent excitation, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally and vertically, relative to the other during use; and

a control unit adapted to coordinate and synchronize illumination times and lateral and vertical movement between said sample holder and said detection and analysis system during use.

66. (New) The arrangement of claim 65, wherein said lateral and vertical movement is controlled by a piezo element.

67. (New) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in large-area fluorescent excitation, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally, relative to the other during use; and

a control unit adapted to coordinate and synchronize illumination times and lateral movement between said sample holder and said detection and analysis system during use, wherein said control unit is further adapted to coordinate and synchronize positioning and shifting of images to each sample position on a pixel array of said CCD camera during use.

68. (New) An arrangement adapted to visualize molecules comprising:

at least one source of light configured for use in large-area fluorescent excitation, via single or multiple photon absorption, of marker molecules in a sample during use;

a sample holder;

a detection and analysis system comprising a charged coupled device (CCD) camera, wherein at least one of the sample holder and the detection and analysis system is movable laterally, relative to the other during use, and wherein said CCD camera includes a frame shift mode and a continuous readout mode; and

a control unit adapted to coordinate and synchronize illumination times and lateral movement between said sample holder and said detection and analysis system during use.